



The Pennsylvania System of School Assessment

Mathematics Item and Scoring Sampler



**2008–2009
Grade 11**

MATHEMATICS

FIRST OPEN-ENDED ITEM

A.2

51. Karla boards cats for their owners. She charges for mileage, meals, and for each night's stay. Fees for these services are shown below.

Services and Fees		
Mileage	Overnight Stay	Meal
\$0.19/mile	\$6.25	\$1.85

- A. Mr. Olvera's cat stayed with Karla for 9 nights and ate 11 meals. Karla drove 56 miles total to pick up and drop off Mr. Olvera's cat. What is the total fee for all services? Show all your work. Explain why you did each step.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

51. *Continued.* Please refer to the previous page for task explanation.

- B. One can of food feeds 3 cats. In order to feed 24 cats, exactly how many cans of cat food will Karla need? Show or explain all your work.

- C. It took Karla and her helper 24 minutes to feed 18 cats. Working at the same rate, how long should it take Karla and 2 helpers to feed the 18 cats? Show or explain all your work.

MATHEMATICS

ITEM-SPECIFIC SCORING GUIDELINE

Item #51

This item will be reported under Category A, Numbers and Operations.

Assessment Anchor:

A.2–Understand the meanings of operations, use operations, and understand how they relate to each other.

Specific Eligible Content addressed by this item:

A.2.1.1–Solve problems using operations with rational numbers including rates and percents (single and multi-step and multiple procedure operations) (e.g., distance, work and mixture problems, etc.).

A.2.1.2–Solve problems using direct and inverse proportions.

A.2.1.3–Identify and/or use proportional relationships in problem solving settings.

Scoring Guide:

Score	In response to this item, the student—
4	demonstrates a thorough understanding of solving problems using rates and using direct and inverse proportions by correctly solving problems and clearly explaining procedures.
3	demonstrates a general understanding of solving problems using rates and using direct and inverse proportions with only minor errors or omissions.
2	demonstrates a partial understanding of solving problems using rates and using direct and inverse proportions by correctly performing a significant portion of the required task.
1	demonstrates minimal understanding of solving problems using rates and using direct and inverse proportions.
0	The response has given no correct answer and insufficient evidence to demonstrate any understanding of the mathematical concepts and procedures as required by the task. Response may show only information copied from the question.
Non-scorable	BLK (blank)... Blank, entirely erased, or written refusal to respond OT.....Off task IL..... Illegible LOE Response in a language other than English

MATHEMATICS

Item #51

Top Scoring Response:

Part A Answer	Support
\$87.24	$56 \times 0.19 = 10.64$ $6.25 \times 9 = 56.25$ $1.85 \times 11 = 20.35$ $10.64 + 56.25 + 20.35 = 87.24$ <p>I multiplied each fee by the number of times it was used. Then I added them all up to get the total fee.</p>

(1.5 score points)

0.5 point for correct answer

1.0 point for complete support

Part B Answer	Support
8 cans	$\frac{1}{3} = \frac{c}{24}$ $24 \div 3 = 8$ <p>OR</p> <p>equivalent</p>

(1 score point)

0.5 point for correct answer

0.5 point for complete support

Part C Answer	Support
16 minutes	$2 \times 24 = 3m$ $48 \div 3 = m$ $m = 16$ <p>OR</p> <p>equivalent</p>

(1.5 score points)

0.5 point for correct answer

1.0 point for complete support

MATHEMATICS

OPEN-ENDED ITEM RESPONSES

A.2 Response Score: 4

51. Karla boards cats for their owners. She charges for mileage, meals, and for each night's stay. Fees for these services are shown below.

Services and Fees		
Mileage	Overnight Stay	Meal
\$0.19/mile	\$6.25	\$1.85

- A. Mr. Olvera's cat stayed with Karla for 9 nights and ate 11 meals. Karla drove 56 miles total to pick up and drop off Mr. Olvera's cat. What is the total fee for all services? Show all your work. Explain why you did each step.

Show:

$$9 \times 6.25 = 56.25$$

$$11 \times 1.85 = 20.35$$

$$56 \times 0.19 = 10.64$$

$$\underline{\underline{\$87.24}}$$

Explain:

First, I multiplied 9×6.25 to get the cost for the overnight stays. Then I did 11×1.85 to get the cost for the meals. Finally I did 56×0.19 for the mileage and added them all together to get my total.

The student has given a correct answer.
The student has shown complete support.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

51. *Continued.* Please refer to the previous page for task explanation.

- B. One can of food feeds 3 cats. In order to feed 24 cats, exactly how many cans of cat food will Karla need? Show or explain all your work.

$$\frac{24}{3} = 8 \text{ cans}$$

The student has given a correct answer.
The student has shown complete support.

- C. It took Karla and her helper 24 minutes to feed 18 cats. Working at the same rate, how long should it take Karla and 2 helpers to feed the 18 cats? Show or explain all your work.

$$\begin{aligned} 2(24) &= 3(x) \\ \frac{48}{3} &= x \\ 16 \text{ minutes} \end{aligned}$$

The student has given a correct answer.
The student has shown complete support.

MATHEMATICS

A.2 Response Score: 3

51. Karla boards cats for their owners. She charges for mileage, meals, and for each night's stay. Fees for these services are shown below.

Services and Fees		
Mileage	Overnight Stay	Meal
\$0.19/mile	\$6.25	\$1.85

- A. Mr. Olvera's cat stayed with Karla for 9 nights and ate 11 meals. Karla drove 56 miles total to pick up and drop off Mr. Olvera's cat. What is the total fee for all services? Show all your work. Explain why you did each step.

$$9 \times 6.25 + 11 \times 1.85 + 56 \times .19 = \underline{\$87.24}$$

MULTIPLY EACH PRICE BY THE NUMBER OF TIMES
THEY WERE USED. THEN ADD THEM TOGETHER TO
GET THE TOTAL FEE.

The student has given a correct answer.
The student has shown complete support.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

51. *Continued.* Please refer to the previous page for task explanation.

- B. One can of food feeds 3 cats. In order to feed 24 cats, exactly how many cans of cat food will Karla need? Show or explain all your work.

$$\begin{array}{cccccccc}
 & 3 & + & 3 & + & 3 & + & 3 & + & 3 & + & 3 & + & 3 & + & 3 & = & 24 \\
 / & & / & & / & & / & & / & & / & & / & & / & & / \\
 1 & \text{CAN} & 1 & \text{CAN} & 1 & \text{CAN} & 1 & \text{CAN} & 1 & \text{CAN} & 1 & \text{CAN} & 1 & \text{CAN} & 1 & \text{CAN} & 1 & \text{CAN}
 \end{array}$$

8 CANS

The student has given a correct answer.
The student has shown complete support.

- C. It took Karla and her helper 24 minutes to feed 18 cats. Working at the same rate, how long should it take Karla and 2 helpers to feed the 18 cats? Show or explain all your work.

16 MINUTES

The student has given a correct answer.
The student has shown no support.

MATHEMATICS

A.2 Response Score: 3

51. Karla boards cats for their owners. She charges for mileage, meals, and for each night's stay. Fees for these services are shown below.

Services and Fees		
Mileage	Overnight Stay	Meal
\$0.19/mile	\$6.25	\$1.85

- A. Mr. Olvera's cat stayed with Karla for 9 nights and ate 11 meals. Karla drove 56 miles total to pick up and drop off Mr. Olvera's cat. What is the total fee for all services? Show all your work. Explain why you did each step.

$$\begin{array}{r}
 9 \times 6.25 = 56.25 \\
 11 \times 1.85 = 20.53 \\
 56 \times .19 = 10.64 \\
 \hline
 \$87.42
 \end{array}$$

Step 1. I timesed 9 and 6.25 for the overnight stay.
 Step 2. I timesed 11 and 1.85 for meals.
 Step 3. I timesed 56 and .19 for mileage.
 Step 4. I added them all up and got \$87.42.

The student has given an incorrect answer.
 The student has shown complete support.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

51. *Continued.* Please refer to the previous page for task explanation.

- B. One can of food feeds 3 cats. In order to feed 24 cats, exactly how many cans of cat food will Karla need? Show or explain all your work.

$$3 \times 8 = 24$$

8 cans

The student has given a correct answer.
The student has shown complete support.

- C. It took Karla and her helper 24 minutes to feed 18 cats. Working at the same rate, how long should it take Karla and 2 helpers to feed the 18 cats? Show or explain all your work.

2 people \rightarrow 24 minutes

1 person \rightarrow 48 minutes

$$\frac{48}{18} = 2.67 \text{ minutes / cat}$$

so 18 cats \times 2.67 minutes / cat = 48 minutes

$$48 / 3 \text{ people} = 16 \text{ minutes / person}$$

The student has given a correct answer. The student has shown complete support. Based on PSSA scoring rules, $3\frac{1}{2}$ becomes a 3.

MATHEMATICS

A.2 Response Score: 2

51. Karla boards cats for their owners. She charges for mileage, meals, and for each night's stay. Fees for these services are shown below.

Services and Fees		
Mileage	Overnight Stay	Meal
\$0.19/mile	\$6.25	\$1.85

- A. Mr. Olvera's cat stayed with Karla for 9 nights and ate 11 meals. Karla drove 56 miles total to pick up and drop off Mr. Olvera's cat. What is the total fee for all services? Show all your work. Explain why you did each step.

$$\begin{array}{r}
 9 \times 6.25 = \$56.25 \\
 11 \times 1.85 = \$20.35 \\
 56 \times .19 = \$10.64 \\
 \hline
 \$87.51
 \end{array}$$

Mr. Olvera would multiply the fee for each service times the number of times Karla did the service (mileage, meals, and each night's stay). Then he would add them up to get the total fee for all services.

The student has given an incorrect answer.
The student has shown complete support.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

51. *Continued.* Please refer to the previous page for task explanation.

- B. One can of food feeds 3 cats. In order to feed 24 cats, exactly how many cans of cat food will Karla need? Show or explain all your work.

$$\begin{array}{rcl} 1 & = & \text{cat} + \text{cat} + \text{cat} \\ \times 8 & & \times 8 \\ \hline 8 \text{ cans} & & 24 \text{ cats} \end{array}$$

The student has given a correct answer.
The student has shown complete support.

- C. It took Karla and her helper 24 minutes to feed 18 cats. Working at the same rate, how long should it take Karla and 2 helpers to feed the 18 cats? Show or explain all your work.

$$\begin{array}{l} 24/18 = 4/3 \text{ cats per min.} \\ 18 \text{ cats} \times \frac{24 \text{ cats}}{3 \text{ mins}} \times \frac{1}{2 \text{ people}} \\ \hline 36 \text{ minutes} \end{array}$$

The student has given an incorrect answer.
The student has shown incorrect support.

MATHEMATICS

A.2 Response Score: 2

51. Karla boards cats for their owners. She charges for mileage, meals, and for each night's stay. Fees for these services are shown below.

Services and Fees		
Mileage	Overnight Stay	Meal
\$0.19/mile	\$6.25	\$1.85

- A. Mr. Olvera's cat stayed with Karla for 9 nights and ate 11 meals. Karla drove 56 miles total to pick up and drop off Mr. Olvera's cat. What is the total fee for all services? Show all your work. Explain why you did each step.

I x'd 9 and \$6.25, 11 and \$1.85, and
56 and 19¢ and added them all
up = \$87.24

The student has given a correct answer. The student has shown incomplete support (no explanation of why).

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

51. *Continued.* Please refer to the previous page for task explanation.

- B. One can of food feeds 3 cats. In order to feed 24 cats, exactly how many cans of cat food will Karla need? Show or explain all your work.

$$\frac{24}{3} = 9 \text{ cans}$$

The student has given an incorrect answer.
The student has shown complete support.

- C. It took Karla and her helper 24 minutes to feed 18 cats. Working at the same rate, how long should it take Karla and 2 helpers to feed the 18 cats? Show or explain all your work.

$$24 - 18 = 6$$
$$6 \times 3 - 2 = 16 \text{ minutes}$$

The student has given a correct answer.
The student has shown incorrect support.

MATHEMATICS

A.2 Response Score: 1

51. Karla boards cats for their owners. She charges for mileage, meals, and for each night's stay. Fees for these services are shown below.

Services and Fees		
Mileage	Overnight Stay	Meal
\$0.19/mile	\$6.25	\$1.85

- A. Mr. Olvera's cat stayed with Karla for 9 nights and ate 11 meals. Karla drove 56 miles total to pick up and drop off Mr. Olvera's cat. What is the total fee for all services? Show all your work. Explain why you did each step.

9 DAYS
11 MEALS
56 MILES

\$ 6.25

\$ 1.85

\$ 0.19

\$ 87.24

The student has given a correct answer.
The student has shown no support.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

51. *Continued.* Please refer to the previous page for task explanation.

- B. One can of food feeds 3 cats. In order to feed 24 cats, exactly how many cans of cat food will Karla need? Show or explain all your work.

$$\frac{24}{3} = 8$$

The student has given a correct answer.
The student has shown complete support.

- C. It took Karla and her helper 24 minutes to feed 18 cats. Working at the same rate, how long should it take Karla and 2 helpers to feed the 18 cats? Show or explain all your work.

$$\frac{24}{2} = 12$$

$$\frac{24}{3} = 8 \text{ MIN}$$

The student has given an incorrect answer. The student has shown incorrect support. Based on PSSA scoring rules, $1\frac{1}{2}$ becomes 1.

MATHEMATICS

A.2 Response Score: 1

51. Karla boards cats for their owners. She charges for mileage, meals, and for each night's stay. Fees for these services are shown below.

Services and Fees		
Mileage	Overnight Stay	Meal
\$0.19/mile	\$6.25	\$1.85

- A. Mr. Olvera's cat stayed with Karla for 9 nights and ate 11 meals. Karla drove 56 miles total to pick up and drop off Mr. Olvera's cat. What is the total fee for all services? Show all your work. Explain why you did each step.

$$\begin{aligned}9 + 11 + 56 &= 76 \\1.85 + 6.25 + 0.19 &= 8.29 \\(76)(8.29) &= 630.04\end{aligned}$$

The student has given an incorrect answer.
The student has shown incorrect support.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

51. *Continued.* Please refer to the previous page for task explanation.

- B. One can of food feeds 3 cats. In order to feed 24 cats, exactly how many cans of cat food will Karla need? Show or explain all your work.



8 CANS

The student has given a correct answer.
The student has shown complete support.

- C. It took Karla and her helper 24 minutes to feed 18 cats. Working at the same rate, how long should it take Karla and 2 helpers to feed the 18 cats? Show or explain all your work.

$$\begin{aligned}(2)(24) &= 48 \\ 48 - 18 &= 30 \\ 30/3 &= 10 \text{ minutes}\end{aligned}$$

The student has given an incorrect answer.
The student has shown incorrect support.

MATHEMATICS

A.2 Response Score: 0

51. Karla boards cats for their owners. She charges for mileage, meals, and for each night's stay. Fees for these services are shown below.

Services and Fees		
Mileage	Overnight Stay	Meal
\$0.19/mile	\$6.25	\$1.85

- A. Mr. Olvera's cat stayed with Karla for 9 nights and ate 11 meals. Karla drove 56 miles total to pick up and drop off Mr. Olvera's cat. What is the total fee for all services? Show all your work. Explain why you did each step.

$$11 \times 6.25 = \$68.75$$
$$9 \times 1.85 = \$16.65$$

The student has given no answer.
The student has shown incorrect support.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

51. *Continued.* Please refer to the previous page for task explanation.

- B. One can of food feeds 3 cats. In order to feed 24 cats, exactly how many cans of cat food will Karla need? Show or explain all your work.

$$24 \times 3 = 72 \text{ cans}$$

The student has given an incorrect answer.
The student has shown incorrect support.

- C. It took Karla and her helper 24 minutes to feed 18 cats. Working at the same rate, how long should it take Karla and 2 helpers to feed the 18 cats? Show or explain all your work.

$$\frac{72 \text{ cans}}{24 \text{ minutes}} = 3 \text{ cans/minute}$$

$$18 \text{ cats} / 3 \text{ people} = 6 \text{ cats per person}$$

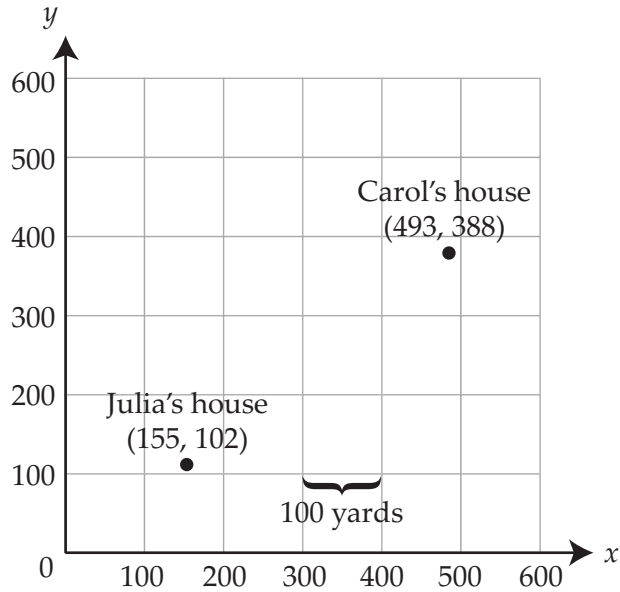
The student has given no answer.
The student has shown incorrect support.

MATHEMATICS

SECOND OPEN-ENDED ITEM

C.3

52. Julia created the coordinate grid below to identify the locations of her house and her friend Carol's house. Julia's house is located at $(155, 102)$. Carol's house is located at $(493, 388)$.



- A. What are the coordinates of the midpoint between the girls' houses? Show all your work and explain how you know your answer is correct.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

52. *Continued.* Please refer to the previous page for task explanation.

- B.** There is a straight path between the girls' houses. If Julia and Carol meet at the midpoint between their houses, what distance would each girl have to walk? Round the answer to the nearest yard. Show all your work and explain how you know your answer is correct.

MATHEMATICS

ITEM-SPECIFIC SCORING GUIDELINE

Item #52

This item will be reported under Category C, Geometry.

Assessment Anchor:

C.3—Locate points or describe relationships using the coordinate plane.

Specific Eligible Content addressed by this item:

C.3.1.1—Calculate the distance and/or midpoint between 2 points on a number line or on a coordinate plane (formula provided on the reference sheet).

Scoring Guide:

Score	In response to this item, the student—
4	demonstrates a thorough understanding of calculating the distance and midpoint between 2 points on a coordinate plane by correctly solving problems and clearly explaining procedures.
3	demonstrates a general understanding of calculating the distance and midpoint between 2 points on a coordinate plane by correctly solving problems and clearly explaining procedures with only minor errors or omissions.
2	demonstrates a partial understanding of calculating the distance and midpoint between 2 points on a coordinate plane by correctly performing a significant portion of the required task.
1	demonstrates minimal understanding of calculating the distance and midpoint between 2 points on a coordinate plane.
0	The response has no correct answer and insufficient evidence to demonstrate any understanding of the mathematical concepts and procedures as required by the task. Response may show only information copied from the question.
Non-scorable	BLK (blank)... Blank, entirely erased, or written refusal to respond OT Off task IL Illegible LOE Response in a language other than English

MATHEMATICS

Item #52

Top Scoring Response:

Part A Answer	Support
(324, 245)	$M = \left(\frac{155 + 493}{2}, \frac{102 + 388}{2} \right)$ $M = \left(\frac{648}{2}, \frac{490}{2} \right) = (324, 245)$ <p>AND</p> <p>To find the midpoint, I used the midpoint formula</p> $M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right).$ <p>I plugged the coordinates for Julia's house (155, 102) in for (x_1, y_1) and the coordinates for Carol's house (493, 388) in for (x_2, y_2). After doing the calculations, I got (324, 245) as the midpoint.</p> <p>OR equivalent</p>

(2 score points)

0.5 point for each correct coordinate

0.5 point for correct work

0.5 point for complete explanation

Part B Answer	Support
221 (yards)	$d = \sqrt{(324 - 155)^2 + (245 - 102)^2}$ $d = \sqrt{(169)^2 + (143)^2}$ $d = \sqrt{49,040} \approx 221.4 \approx 221 \text{ yards}$ <p>AND</p> <p>To find the distance between one of the houses and the midpoint, I used the distance formula $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$. I plugged the coordinates of Julia's house (155, 102) in for (x_1, y_1). Also, I plugged the midpoint (324, 245) I found in part A in for (x_2, y_2). After doing the calculations, I got 221.4 yards. I rounded 221.4 to the nearest yard to get 221 yards as my final answer.</p> <p>OR equivalent</p>

(2 score points)

1 point for correct answer

0.5 point for correct work

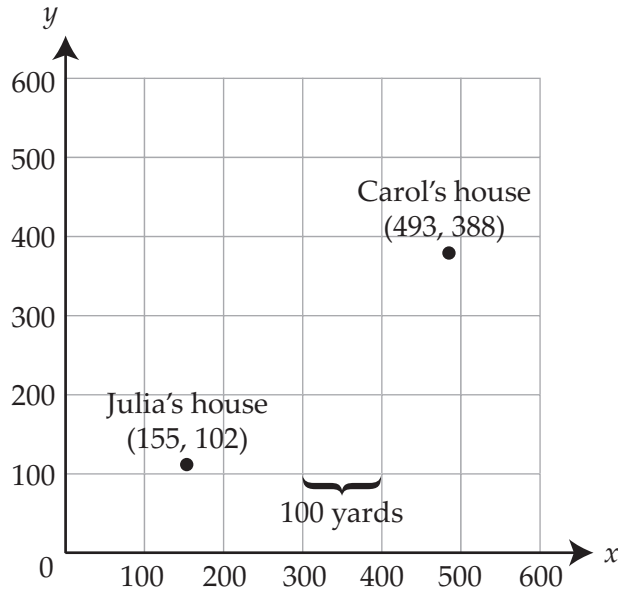
0.5 point for complete explanation

MATHEMATICS

OPEN-ENDED ITEM RESPONSES

C.3 Response Score: 4

52. Julia created the coordinate grid below to identify the locations of her house and her friend Carol's house. Julia's house is located at (155, 102). Carol's house is located at (493, 388).



- A. What are the coordinates of the midpoint between the girls' houses? Show all your work and explain how you know your answer is correct.

Midpoint

$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$\left(\frac{493 + 155}{2}, \frac{388 + 102}{2} \right)$$

$$(324, 245)$$

I used the midpoint formula for this problem. I made the coordinates of Carol's house be 1 and the coordinates of Julia's house be 2. I put x_1 and x_2 into the formula to get an x-coordinate of 324. I entered y_1 and y_2 into the formula to get a y-coordinate of 245. The midpoint between the girls' houses is (324, 245).

The student has given the correct answers.
The student has shown correct work.
The student has given a complete explanation.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

52. *Continued.* Please refer to the previous page for task explanation.

- B. There is a straight path between the girls' houses. If Julia and Carol meet at the midpoint between their houses, what distance would each girl have to walk? Round the answer to the nearest yard. Show all your work and explain how you know your answer is correct.

Distance

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$d = \sqrt{(493 - 324)^2 + (388 - 245)^2}$$

$$d = \sqrt{28561 + 20449}$$

$$d = 221.4 \text{ yards}$$

$d = 221 \text{ yards}$

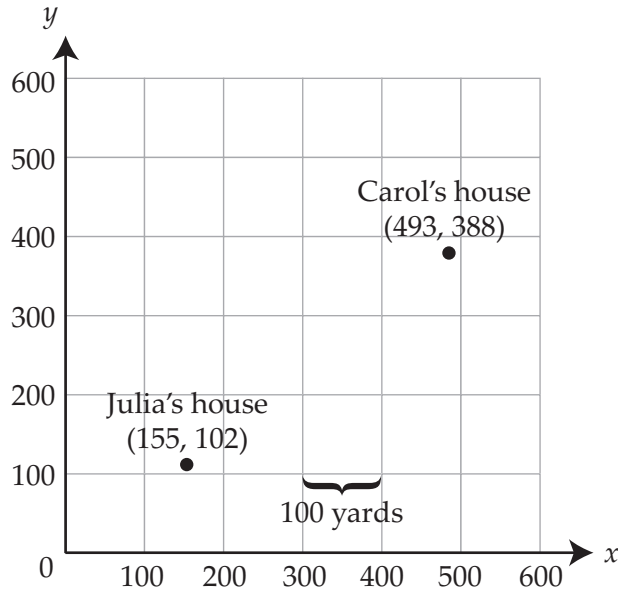
The distance formula is $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$. I used the coordinates of Carol's house as 2 and the coordinates of the midpoint as 1. This is because each girl is only walking to the midpoint. I put x_1 , x_2 , y_1 , and y_2 into the formula and got about 221.4 yards. I rounded to 221 yards as the distance each girl would have to walk to meet at the midpoint.

The student has given a correct answer.
The student has shown correct work.
The student has given a complete explanation.

MATHEMATICS

C.3 Response Score: 3

52. Julia created the coordinate grid below to identify the locations of her house and her friend Carol's house. Julia's house is located at (155, 102). Carol's house is located at (493, 388).



- A. What are the coordinates of the midpoint between the girls' houses? Show all your work and explain how you know your answer is correct.

$$493 + 155 = \frac{648}{2} = 324$$

$$388 + 102 = \frac{490}{2} = 245$$

$$\text{coordinates} = 324, 245$$

get an average of the two to figure out where the middle is.

The student has given the correct answers.
The student has shown correct work.
The student has given a complete explanation.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

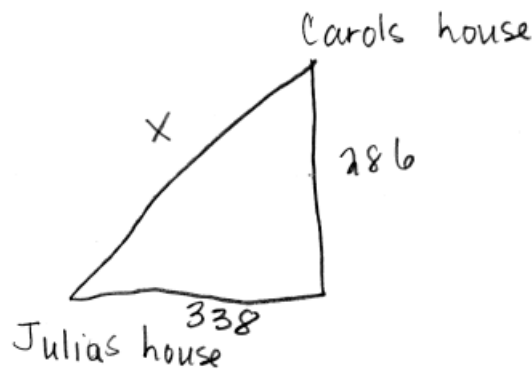
52. *Continued.* Please refer to the previous page for task explanation.

- B. There is a straight path between the girls' houses. If Julia and Carol meet at the midpoint between their houses, what distance would each girl have to walk? Round the answer to the nearest yard. Show all your work and explain how you know your answer is correct.

$$324, 245 = \text{middle}$$

$$x = 324$$

$$y = 245$$



$$493 - 155 = 338, 286$$

$$x^2 = 338^2 + 286^2$$

$$x^2 = 114244 + 81796$$

$$x^2 = 196040$$

$$x = 443$$

$$\frac{1}{2}x = \text{distance for each girl to walk}$$

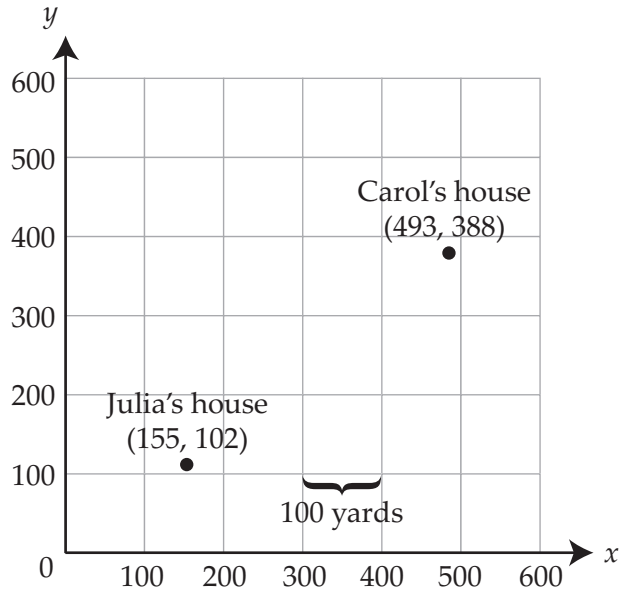
$$x = 222$$

The student has given a correct answer.
The student has shown complete work.
The student has given no explanation.

MATHEMATICS

C.3 Response Score: 3

52. Julia created the coordinate grid below to identify the locations of her house and her friend Carol's house. Julia's house is located at (155, 102). Carol's house is located at (493, 388).



- A. What are the coordinates of the midpoint between the girls' houses? Show all your work and explain how you know your answer is correct.

$$\begin{array}{r} 493 \\ -155 \\ \hline 2 \overline{)338} \end{array} \quad \begin{array}{r} 388 \\ -102 \\ \hline 2 \overline{)286} \end{array}$$

$$\boxed{169, 143}$$

$$\begin{array}{r} 169 \\ +155 \\ \hline 324 \end{array} \quad \begin{array}{r} 102 \\ +143 \\ \hline 245 \end{array}$$

SUBTRACT THE
NUMBERS + THEN
DIVIDE BY 2. THEN
ADD TO JULIA'S
HOUSE + GET 324,
245. THAT'S THE
MIDPOINT.

The student has given the correct answers.
The student has shown correct work.
The student has given a complete explanation.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

52. *Continued.* Please refer to the previous page for task explanation.

- B. There is a straight path between the girls' houses. If Julia and Carol meet at the midpoint between their houses, what distance would each girl have to walk? Round the answer to the nearest yard. Show all your work and explain how you know your answer is correct.

$$\sqrt{169^2 + 143^2} = 221.38 \text{ YARDS}$$

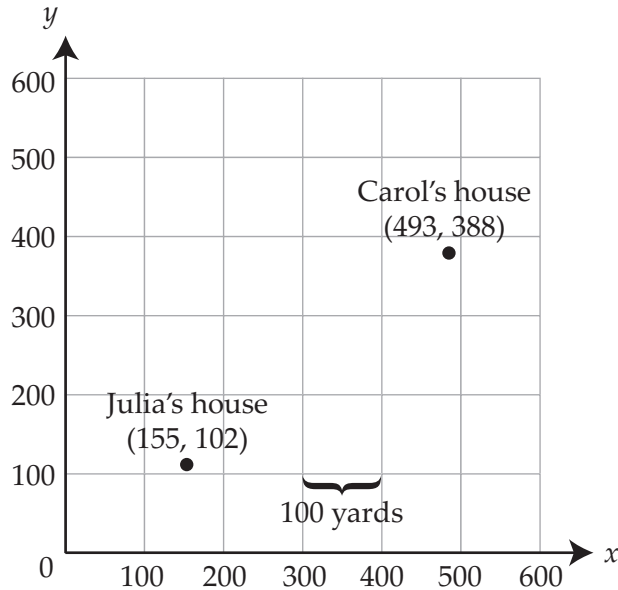
YOU TAKE THE 2 DISTANCES FROM
OTHER PROBLEM + SQUARE THEM
BOTH + TAKE THE SQUARE ROOT OF
THE ANSWER + GET 221.38 YDS.

The student has given a correct answer but did not round.
The student has shown correct work.
The student has given a mostly complete explanation.

MATHEMATICS

C.3 Response Score: 2

52. Julia created the coordinate grid below to identify the locations of her house and her friend Carol's house. Julia's house is located at (155, 102). Carol's house is located at (493, 388).



- A. What are the coordinates of the midpoint between the girls' houses? Show all your work and explain how you know your answer is correct.

$$\text{midpoint} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$\text{midpoint} = \left(\frac{155 + 493}{2}, \frac{102 + 388}{2} \right) = \left(\frac{648}{2}, \frac{490}{2} \right)$$

(324, 245) ←

I took the coordinates of Carol's house & Julia's house and plugged the coordinates into the formula. (midpoint formula).

I solved the equation and got (324, 245) for the midpoint.

The student has given the correct answers.
The student has shown correct work.
The student has given a complete explanation.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

52. *Continued.* Please refer to the previous page for task explanation.

- B. There is a straight path between the girls' houses. If Julia and Carol meet at the midpoint between their houses, what distance would each girl have to walk? Round the answer to the nearest yard. Show all your work and explain how you know your answer is correct.

midpoint is (324, 245)

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$d = \sqrt{(493 - 155)^2 + (388 - 102)^2}$$

$$d = \sqrt{(338)^2 + (286)^2}$$

$$d = \sqrt{(114244) + (81796)}$$

$$d = \sqrt{196040}$$

$$d = 442.7640$$

$$d = 443 \text{ yards}$$

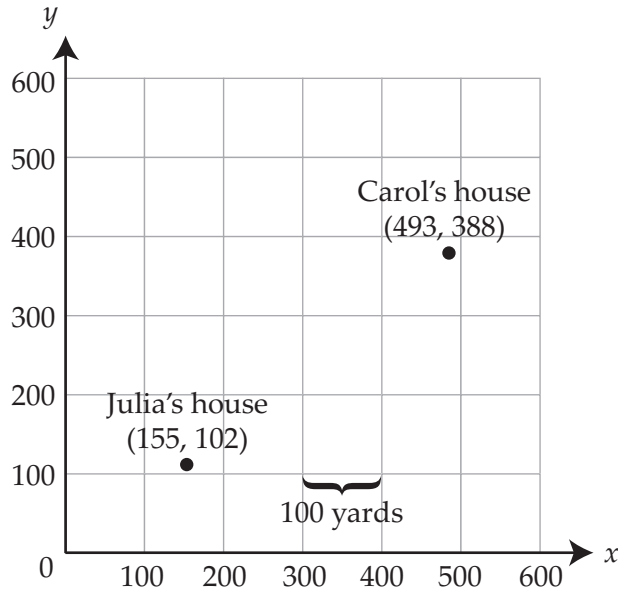
I plugged in the numbers of the coordinates into the formula and solved the problem. I got 442.7640 and rounded it to 443 yards.

The student has given an incorrect answer.
The student has not shown correct work.
The student has given an incomplete explanation.

MATHEMATICS

C.3 Response Score: 2

52. Julia created the coordinate grid below to identify the locations of her house and her friend Carol's house. Julia's house is located at (155, 102). Carol's house is located at (493, 388).



- A. What are the coordinates of the midpoint between the girls' houses? Show all your work and explain how you know your answer is correct.

In order to figure out the coordinates of the midpoints between the girls' houses, I had to do two steps. First, I added up the x and then the y axis.

$$493 + 155 = 648 \qquad 388 + 102 = 490$$

Then, I simply divided by two to get the middle point for each.

$$648 \div 2 = 324 \qquad 490 \div 2 = 245$$

I then determined that the coordinates of the midpoint would be (324, 245)

The student has given the correct answers.
The student has shown correct work.
The student has given a complete explanation.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

52. *Continued.* Please refer to the previous page for task explanation.

- B. There is a straight path between the girls' houses. If Julia and Carol meet at the midpoint between their houses, what distance would each girl have to walk? Round the answer to the nearest yard. Show all your work and explain how you know your answer is correct.

In order to determine the distance that each girl would have to walk I had to do two steps. I took my answer from part A and subtracted it from the coordinates of each of their houses.

Carol's house
 $493 - 324 = 169$
 $388 - 245 = 143$

Julia's house
 $169 - 155 = 14$
 $245 - 102 = 143$

I then had to subtract my totals from each girl.

Carol
 $169 - 143 = 26$

Julia
 $143 - 14 = 129$

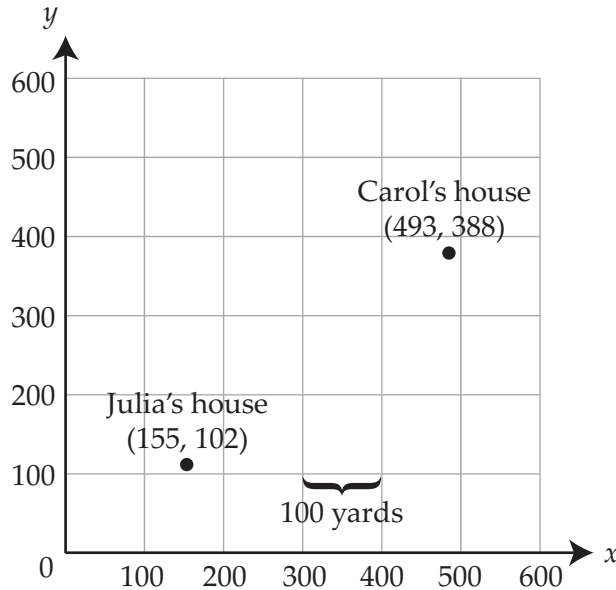
So Carol must walk 2600 yards and Julia must walk 1,2900 yds.

The student has given an incorrect answer.
The student has not shown correct work.
The student has given an incomplete explanation.

MATHEMATICS

C.3 Response Score: 1

52. Julia created the coordinate grid below to identify the locations of her house and her friend Carol's house. Julia's house is located at (155, 102). Carol's house is located at (493, 388).



- A. What are the coordinates of the midpoint between the girls' houses? Show all your work and explain how you know your answer is correct.

To find the midpoint you must use the midpoint formula, which is $\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}$, in this problem it would be set up as follows:

$$\frac{155 + 493}{2}, \frac{102 + 388}{2} = \text{the answer is}$$

$$\text{then } \frac{648}{2} = 324, \frac{320}{2} = 195$$

324, 195

The student has given 1 correct answer.
The student has shown correct work.
The student has given a complete explanation.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

52. *Continued.* Please refer to the previous page for task explanation.

- B. There is a straight path between the girls' houses. If Julia and Carol meet at the midpoint between their houses, what distance would each girl have to walk? Round the answer to the nearest yard. Show all your work and explain how you know your answer is correct.

Each person would have to walk an equal distance, so you take the ordered pairs for one of the people and subtract it from the midpoint to figure out how far they walk.

$$493 - 324 = 169 \text{ yards}$$

$$388 - 195 = 193 \text{ yards}$$

$$362 \text{ yards}$$

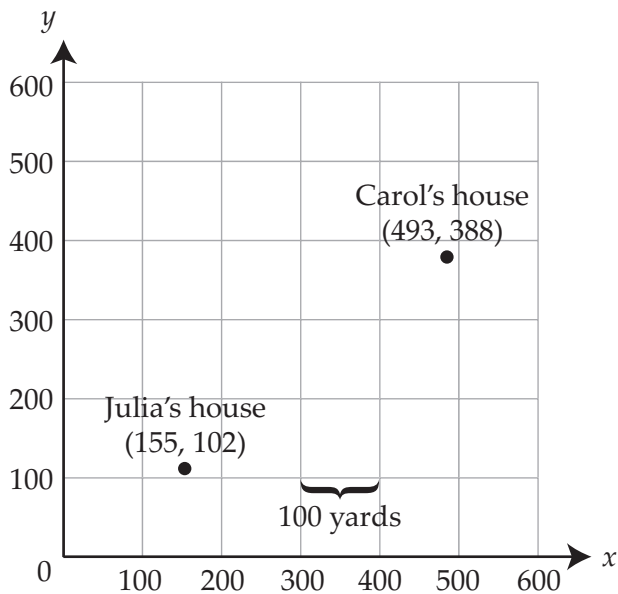
You add how far the two distances are apart and that shows you each girl only walks 362 yards or about 120 feet to each others house,

The student has given an incorrect answer.
The student has not shown correct work.
The student has given an incomplete explanation.

MATHEMATICS

C.3 Response Score: 1

52. Julia created the coordinate grid below to identify the locations of her house and her friend Carol's house. Julia's house is located at $(155, 102)$. Carol's house is located at $(493, 388)$.



- A. What are the coordinates of the midpoint between the girls' houses? Show all your work and explain how you know your answer is correct.

$(324, 308)$

I really don't know
how

The student has given 1 correct coordinate.
The student has not shown correct work.
The student has given an incomplete explanation.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

52. *Continued.* Please refer to the previous page for task explanation.

- B.** There is a straight path between the girls' houses. If Julia and Carol meet at the midpoint between their houses, what distance would each girl have to walk? Round the answer to the nearest yard. Show all your work and explain how you know your answer is correct.

300 yds

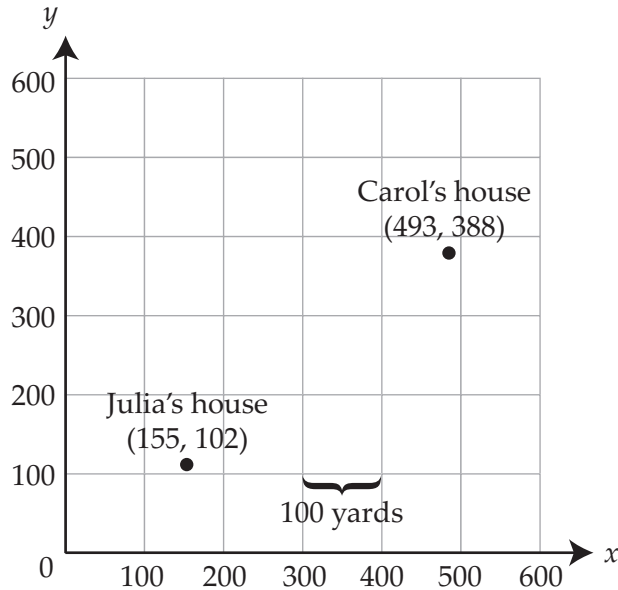
I guess.

The student has given an incorrect answer.
The student has not shown correct work.
The student has given an incomplete explanation.

MATHEMATICS

C.3 Response Score: 0

52. Julia created the coordinate grid below to identify the locations of her house and her friend Carol's house. Julia's house is located at (155, 102). Carol's house is located at (493, 388).



- A. What are the coordinates of the midpoint between the girls' houses? Show all your work and explain how you know your answer is correct.

$$\begin{array}{r} \text{Julia's} \\ \text{house} \end{array} \quad \begin{array}{r} 155 \\ 102 \\ \hline 53 \end{array}$$

The coordinate of the midpoint between Julia's house is 53.

$$\begin{array}{r} \text{Carol's} \\ \text{house} \end{array} \quad \begin{array}{r} 493 \\ -388 \\ \hline 105 \end{array}$$

The coordinate of the midpoint between Carol's house is 105.

The student has given incorrect answers.
The student has not shown correct work.
The student has given an incomplete explanation.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

52. *Continued.* Please refer to the previous page for task explanation.

- B. There is a straight path between the girls' houses. If Julia and Carol meet at the midpoint between their houses, what distance would each girl have to walk? Round the answer to the nearest yard. Show all your work and explain how you know your answer is correct.

Carol would have to
walk $493 - 155 = 390$ yds

Julia would have to walk 290 yds.

$$\begin{array}{r} 388 \\ -102 \\ \hline 286 \end{array}$$

The student has given an incorrect answer.
The student has not shown correct work.
The student has given an incomplete explanation.

MATHEMATICS

THIRD OPEN-ENDED ITEM

D.2

53. Lawrence plans to rent a canoe. The prices of renting a canoe from 2 different stores, Store A and Store B, are shown below.

- Store A: \$20 flat fee plus \$5 per hour
- Store B: \$10 per hour

A. Calculate the cost to rent a canoe from **each** store for 8 hours. Show all your work.

B. For **each** store, write an equation that describes the relationship between the number of hours (h) a canoe is rented and the total cost (c).

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

53. *Continued.* Please refer to the previous page for task explanation.

- C. Lawrence wants to spend no more than \$50 to rent a canoe. From which store should he rent a canoe to get the **greatest** number of rental hours for his money? Show all your work. Explain why you did each step.

MATHEMATICS

ITEM-SPECIFIC SCORING GUIDELINE

Item #53

This item will be reported under Category D, Algebraic Concepts.

Assessment Anchor:

D.2—Represent and/or analyze mathematical situations using numbers, symbols, words, tables and/or graphs.

Specific Eligible Content addressed by this item:

D.2.1.3—Write, solve and/or apply a linear equation (including problem situations).

Scoring Guide:

Score	In response to this item, the student—
4	demonstrates a thorough understanding of how to write, solve and apply a linear equation by correctly solving problems and clearly explaining procedures.
3	demonstrates a general understanding of how to write, solve and apply a linear equation by correctly solving problems and clearly explaining procedures with only minor errors or omissions.
2	demonstrates a partial understanding of how to write, solve and apply a linear equation by correctly performing a significant portion of the required task.
1	demonstrates minimal understanding of how to write, solve and apply a linear equation.
0	The response has no correct answer and insufficient evidence to demonstrate any understanding of the mathematical concepts and procedures as required by the task. Response may show only information copied from the question.
Non-scorable	BLK (blank)... Blank, entirely erased, or written refusal to respond OT.....Off task IL..... Illegible LOE Response in a language other than English

MATHEMATICS

Item #53

Top Scoring Response:

Part A Answer	Support
Store A: \$60 Store B: \$80	<div style="display: flex; justify-content: space-between;"> <div>Store A: $20 + 5 \cdot 8$ $20 + 40$ 60</div> <div>AND</div> <div>Store B: $10 \cdot 8$ 80</div> </div> <p style="text-align: center;">OR equivalent</p>

(1 score point)

0.5 point for each correct answer and correct work **OR**

0.5 point for both correct answers and incomplete work

Part B Answer
Store A: $c = 20 + 5h$ Store B: $c = 10h$ OR equivalent

(1.5 score points)

1.5 points for 2 correct equations **OR**

1 point for 1 correct equation or 2 correct expressions **OR**

1 point for 2 correct equations except for misuse of variable **OR**

0.5 point for 1 correct expression or 2 correct expressions except for misuse of variable

Part C Answer	Support
Store A would allow the greatest number of hours.	<div style="display: flex; justify-content: space-between;"> <div>Store A: $50 = 20 + 5h$ $30 = 5h$ $6 = h$</div> <div>Store B: $50 = 10h$ $5 = h$</div> </div> <p style="text-align: center;">AND</p> <p>Sample Explanation: I substituted 50 in each equation for c and then solved the equation to determine the number of hours he could rent a canoe from each store. He could rent a canoe from Store A for 6 hours, but only 5 hours from Store B.</p> <p style="text-align: center;">OR equivalent</p>

(1.5 score points)

0.5 point for correct answer

0.5 point for correct work

0.5 point for complete explanation

MATHEMATICS

OPEN-ENDED ITEM RESPONSES

D.2 Response Score: 4

53. Lawrence plans to rent a canoe. The prices of renting a canoe from 2 different stores, Store A and Store B, are shown below.

- Store A: \$20 flat fee plus \$5 per hour
- Store B: \$10 per hour

- A. Calculate the cost to rent a canoe from **each** store for 8 hours. Show all your work.

Store A: $\$20 + \$5 \cdot 8 \text{ hours}$

$\$20 \text{ (flat)} + \$40 \text{ (for the 8 hours)}$

$\boxed{\$60}$

Store B: $\$10 \cdot 8 \text{ hours} \rightarrow \text{no flat fee}$

$\boxed{\$80}$

The student has given 2 correct answers.
The student has shown correct work.

- B. For **each** store, write an equation that describes the relationship between the number of hours (h) a canoe is rented and the total cost (c).

Store A

$C = 20 + 5h$

Store B

$C = 10h$

The student has given 2 correct answers.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

53. *Continued.* Please refer to the previous page for task explanation.

- C. Lawrence wants to spend no more than \$50 to rent a canoe. From which store should he rent a canoe to get the **greatest** number of rental hours for his money? Show all your work. Explain why you did each step.

Store A: Equation: $C = 20 + 5h$

- ① Substitute 50 for C, as Lawrence will spend only \$50

$$50 = 20 + 5h$$

- ② Now, solve the equation for h to determine how many hours he can rent the canoe

$$50 = 20 + 5h$$

$$30 = 5h \Rightarrow \text{so, store A} = 6 \text{ hours}$$

$$h = 6$$

Store B: Equation: $C = 10h$

- ① Substitute 50 for C, the amount Lawrence will spend.

$$50 = 10h$$

- ② Solve the equation for h to determine how many hours he can rent the canoe

$$50 = 10h$$

$$h = 5 \Rightarrow \text{Store B} = 5 \text{ hours}$$

Lawrence should rent the canoe from Store A in order to get more hours ($6 > 5$)

The student has given a correct answer.
The student has shown correct work.
The student has given a complete explanation.

MATHEMATICS

D.2 Response Score: 3

53. Lawrence plans to rent a canoe. The prices of renting a canoe from 2 different stores, Store A and Store B, are shown below.

- Store A: \$20 flat fee plus \$5 per hour
- Store B: \$10 per hour

- A. Calculate the cost to rent a canoe from **each** store for 8 hours. Show all your work.

$$\begin{array}{l} \text{Store A} = 5x + 20 \rightarrow 60 \text{ dollars for } 8 \text{ hours} \\ \text{Store B} = 10x \rightarrow 80 \text{ dollars for } 8 \text{ hours} \end{array}$$

The student has given 2 correct answers.
The student has not shown correct work.

- B. For **each** store, write an equation that describes the relationship between the number of hours (h) a canoe is rented and the total cost (c).

$$\text{Store A: } c = 5h + 20$$

$$\text{Store B: } c = 10h$$

The student has given 2 correct answers.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

53. *Continued.* Please refer to the previous page for task explanation.

- C. Lawrence wants to spend no more than \$50 to rent a canoe. From which store should he rent a canoe to get the **greatest** number of rental hours for his money? Show all your work. Explain why you did each step.

HE SHOULD RENT FROM STORE A

Store A: $C = 5h + 20$

To find the answer, I plugged in 50 \$ for the C in both equations. I then solved both equations for h to see which store could provide more hours for 50 dollars

$$\begin{array}{r} 50 = 5h + 20 \\ -20 \quad -20 \end{array}$$

$$\frac{30}{5} = \frac{5h}{5}$$

$$h = 6 \rightarrow 6 \text{ hours with Store A}$$

Store B: $C = 10h$

$$\frac{50}{10} = \frac{10h}{10}$$

$$h = 5 \rightarrow 5 \text{ hours with Store B}$$

The student has given a correct answer.
The student has shown correct work.
The student has given a complete explanation.

MATHEMATICS

D.2 Response Score: 3

53. Lawrence plans to rent a canoe. The prices of renting a canoe from 2 different stores, Store A and Store B, are shown below.

- Store A: \$20 flat fee plus \$5 per hour
- Store B: \$10 per hour

- A. Calculate the cost to rent a canoe from **each** store for 8 hours. Show all your work.

$$\begin{aligned}\text{Store A} &= \$20 \text{ fee plus } 5 \text{ per h} \\ &= \$20 + 5(8) \\ \boxed{A} &= \boxed{\$60}\end{aligned}$$

$$\begin{aligned}\text{Store B} &= \$10 \text{ per hour} \\ &= 10(8) \\ \textcircled{B} &= \textcircled{\$180}\end{aligned}$$

The student has given 1 correct answer with correct work.

- B. For **each** store, write an equation that describes the relationship between the number of hours (h) a canoe is rented and the total cost (c).

$$\begin{aligned}\text{Store A} \\ c &= 20 + 5(h)\end{aligned}$$

$$\begin{aligned}\text{Store B} \\ c &= 10(h)\end{aligned}$$

The student has given 2 correct answers.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

53. *Continued.* Please refer to the previous page for task explanation.

- C. Lawrence wants to spend no more than \$50 to rent a canoe. From which store should he rent a canoe to get the **greatest** number of rental hours for his money? Show all your work. Explain why you did each step.

We know 8 hours is too much so we are going to start from 7 hours

Store A
 $\rightarrow C = 20 + 5(7)$
 $= 55$
 too much

Store B
 $\rightarrow C = 10(7)$
 $= 70$
 too much

} 7 hours

Store A
 $\rightarrow C = 20 + 5(6)$
 $= 50$
 perfect

Store B
 $\rightarrow C = 10(6)$
 $= 60$
 too much

} 6 hours

Lawrence should go to store A and rent a canoe for 6 hours and enjoy his ride.

When I started out, I knew eight hours was too much money from both stores so I eliminated that answer. I tried to find the cost of a canoe for 7 hours for each store and found out it was still too much. Then I decreased again the number of hours by 1 and now I did the same thing but for 6 hours. And store A worked out perfectly.

The student has given a correct answer.
 The student has shown correct work.
 The student has given a complete explanation.

MATHEMATICS

D.2 Response Score: 2

53. Lawrence plans to rent a canoe. The prices of renting a canoe from 2 different stores, Store A and Store B, are shown below.

- Store A: \$20 flat fee plus \$5 per hour
- Store B: \$10 per hour

- A. Calculate the cost to rent a canoe from **each** store for 8 hours. Show all your work.

$$A = \$20 + \$5 \text{ per hr} = 20 + (5 \cdot 8)$$

$$20 + 40 = 60$$

$$B = \$10 \cdot 8 = \$80$$

Store A = \$60
Store B = \$80

The student has given 2 correct answers.
The student has shown correct work.

- B. For **each** store, write an equation that describes the relationship between the number of hours (h) a canoe is rented and the total cost (c).

Store A: $20 + 5(hrs) = C$

Store B: $10(hrs) = C$

The student has given 2 correct answers
with misuse of the variable.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

53. *Continued.* Please refer to the previous page for task explanation.

- C. Lawrence wants to spend no more than \$50 to rent a canoe. From which store should he rent a canoe to get the **greatest** number of rental hours for his money? Show all your work. Explain why you did each step.

$$\begin{array}{l} \text{Store A: } \$20 + \$30 = 6 \text{ hrs} \\ \text{Store B: } \$50 \text{ } 10 \text{ per hr.} = 5 \text{ hrs} \end{array}$$

Store A: would get him the greatest number of rental hrs. Which is 6 hrs he will be able to have.

The student has given a correct answer.
The student has not shown correct work.
The student has given an incomplete explanation.

MATHEMATICS

D.2 Response Score: 2

53. Lawrence plans to rent a canoe. The prices of renting a canoe from 2 different stores, Store A and Store B, are shown below.

- Store A: \$20 flat fee plus \$5 per hour
- Store B: \$10 per hour

- A. Calculate the cost to rent a canoe from **each** store for 8 hours. Show all your work.

$$\begin{array}{l} \text{A: } 5(8) + 20 \\ \quad \text{\$60} \end{array}$$

$$\begin{array}{l} \text{B: } 8(10) \\ \quad \text{\$80} \end{array}$$

The student has given 2 correct answers.
The student has shown correct work.

- B. For **each** store, write an equation that describes the relationship between the number of hours (h) a canoe is rented and the total cost (c).

$$\text{A: } C = 5h + 20$$

$$\text{B: } C = 8h$$

The student has given 1 correct answer.

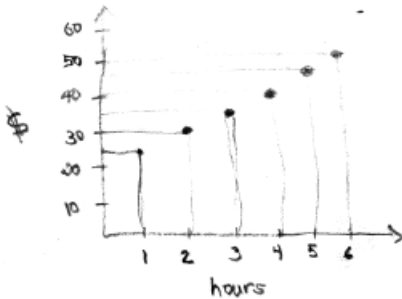
GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

53. *Continued.* Please refer to the previous page for task explanation.

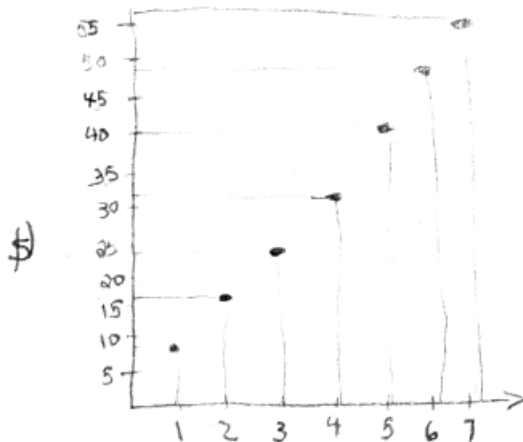
- C. Lawrence wants to spend no more than \$50 to rent a canoe. From which store should he rent a canoe to get the **greatest** number of rental hours for his money? Show all your work. Explain why you did each step.

A:



Lawrence will get the same amount of hours (6). But if he goes with Store B he will pay 2 dollars less then Store A for 6 hours.

B



I made a graph showing me for every hour how much it would cost.

The student has given an incorrect answer.
The student has not shown correct work.
The student has given an incomplete explanation.

MATHEMATICS

D.2 Response Score: 1

53. Lawrence plans to rent a canoe. The prices of renting a canoe from 2 different stores, Store A and Store B, are shown below.

- Store A: \$20 flat fee plus \$5 per hour
- Store B: \$10 per hour

- A. Calculate the cost to rent a canoe from **each** store for 8 hours. Show all your work.

$$\text{Store A: } 20 + 40 = \text{would be } \$60$$

(5×8)

$$\text{Store B: } 10 \times 8 = \$80$$

The student has given 2 correct answers.
The student has shown correct work.

- B. For **each** store, write an equation that describes the relationship between the number of hours (h) a canoe is rented and the total cost (c).

$$\text{Store A: } h = c - 20$$

$$\text{Store B: } h = 2(c)$$

The student has given 2 incorrect answers.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

53. *Continued.* Please refer to the previous page for task explanation.

- C. Lawrence wants to spend no more than \$50 to rent a canoe. From which store should he rent a canoe to get the **greatest** number of rental hours for his money? Show all your work. Explain why you did each step.

Lawrence should spend his money at Store A because you get a better deal for more hours. If Lawrence wanted to go for the amount of time he can for \$50 dollars, he can go to store A. He can go for 6 hours for only \$50, but if he went to store B he could only go for 5 hours, one hour less than store A. Therefore, the best choice would to go to Store A so you can enjoy canoeing one hour longer.

The student has given a correct answer.
The student has not shown correct work.
The student has given an incomplete explanation.

MATHEMATICS

D.2 Response Score: 1

53. Lawrence plans to rent a canoe. The prices of renting a canoe from 2 different stores, Store A and Store B, are shown below.

- Store A: \$20 flat fee plus \$5 per hour
- Store B: \$10 per hour

A. Calculate the cost to rent a canoe from **each** store for 8 hours. Show all your work.

For store A 8 hours would be \$60.00

$$\begin{array}{r} 8 \\ \times 5 \\ \hline 40 \end{array} \quad \begin{array}{r} 40.00 \\ 20.00 \\ \hline \$60.00 \end{array}$$

I did 8 hours times the hours which is 40 plus the \$20.00 flat fee.

$$\begin{array}{r} 10 \\ \times 8 \\ \hline 80 \end{array}$$

Store B would be \$80.00 to rent a canoe

8 hours times the \$10 per minute

The student has given 2 correct answers.
The student has shown correct work.

B. For **each** store, write an equation that describes the relationship between the number of hours (h) a canoe is rented and the total cost (c).

$8h$.

Store A equation can be

$$x = 8h \cdot 5 + 20 \quad \text{or} \quad x = h \cdot c + 20.00$$

Store B equation can be $x = 8h \cdot 10$

The student has given 2 incorrect answers.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

53. *Continued.* Please refer to the previous page for task explanation.

- C. Lawrence wants to spend no more than \$50 to rent a canoe. From which store should he rent a canoe to get the **greatest** number of rental hours for his money? Show all your work. Explain why you did each step.

If you wanted to rent a canoe you should get it from store A because B is more expensive each time

<u>store A</u>	
8 hours	- \$60.00
9 hours	- \$65.00
10 hours	\$70.00
11 hours	\$75.00
12 hours	\$80.00

<u>Store B</u>	
8 hours	\$80.00
9 hours	\$90.00
10 hours	\$100.00
11 hours	\$110.00
12 hours	\$120.00

Every hour is only an additional 5.00 from store A but store B increases each time by \$10.00

The student has given a correct answer.
The student has not shown correct work.
The student has given an incomplete explanation.

MATHEMATICS

D.2 Response Score: 0

53. Lawrence plans to rent a canoe. The prices of renting a canoe from 2 different stores, Store A and Store B, are shown below.

- Store A: \$20 flat fee plus \$5 per hour
- Store B: \$10 per hour

- A. Calculate the cost to rent a canoe from **each** store for 8 hours. Show all your work.

10 \$

The student has given an incorrect answer.
The student has not shown correct work.

- B. For **each** store, write an equation that describes the relationship between the number of hours (h) a canoe is rented and the total cost (c).

8

The student has given an incorrect answer.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

53. *Continued.* Please refer to the previous page for task explanation.

- C. Lawrence wants to spend no more than \$50 to rent a canoe. From which store should he rent a canoe to get the **greatest** number of rental hours for his money? Show all your work. Explain why you did each step.

Alright, what store did he get it from?
He doesn't wanna spend more then 50\$ to rent a canoe so he should spend about 45\$.

The student has given an incorrect answer.
The student has not shown correct work.
The student has given an incomplete explanation.

Mathematics
Grade 11
Item and Scoring Sampler

Copyright © 2008 by the Pennsylvania Department of Education. The materials contained in this publication may be duplicated by Pennsylvania educators for local classroom use. This permission does not extend to the duplication of materials for commercial use.